0028

TECHNICAL MEMORANDUM

Utah Coal Regulatory Program

OK

July 11, 2007

TO: Internal File

FROM: Peter H. Hess, Environmental Scientist III/Engineering PHH by an

RE: Methane Degasification Well, G-19, Canyon Fuel Company, Dugout Canyon Mine, C/007/0039, Task ID #2812

SUMMARY:

The permittee submitted a proposal to the Division on June 19, 2007 to permit the potential drilling of one methane degasification borehole (G-19) at the Dugout Canyon Mine. The purpose of this hole is identical to the purpose of all degasification wells developed to this point, which is to enhance the coal extraction process by allowing additional methane venting capability from the longwall panel being extracted. The panel associated with G-19 is located in Section 20 of Township 13 South Range 13 East. The permittee's intent is to initiate drilling of hole G-19 in mid-July, 2007.

All surface lands are leased by the permittee from the Milton and Ardith Thayn Trust. Coal ownership is under the U.S. Department of the Interior, Bureau of Land Management (Federal lease U-07064) in Section 20.

The submittal designated as Task ID # 2812 will add 2.75 acres of disturbed area acreage to the Mine's bond reclamation liability.

TECHNICAL ANALYSIS:

GENERAL CONTENTS

IDENTIFICATION OF INTERESTS

Regulatory Reference: 30 CFR 773.22; 30 CFR 778.13; R645-301-112

Analysis:

The Identification of Interest information is in the Mining and Reclamation Plan, General Chapter 1. This information was revised in February of 2006. The information has not changed.

The corporate officers have not changed.

All surface ownership in Section 20 is held by the heirs of the Milton and Ardith Thayn Trust (See Plate 1-1, Dugout Mine MRP, updated / incorporated March 2007).

A review of Plate 1-2, as contained in the approved mining and reclamation plan for the Dugout Canyon Mine, indicates that the coal ownership in Section 20 where this degasification well is being proposed is by the State of Utah, which is managed by the School and Institutional Trust Lands Administration.

The wells are located within the currently approved mine permit area. The owners of record for the surface lands where this well is being proposed are the heirs of the Milton and Ardith Thayn Trust.

The U.S. Department of Labor, Mine Safety and Health Administration has issued three identification numbers relative to the Dugout Canyon Mine; these are:

1) MSHA No. 42-01890 for the Gilson seam on the west side of the Canyon,
2) MSHA No. 42-01888 for the Gilson seam on the west side of the Canyon, and
3) MSHA No. 1211-UT-09-01890-01 Dugout Canyon Mine Refuse Pile.

All are contained in **Chapter 1**, page **1-19**, Section **112.700 MSHA Numbers** of the approved mining and reclamation plan.

Chapter 1, page **1-5**, section **112.800 Interest in Contiguous Lands** of the methane well submittal indicates that Canyon Fuel Company, LLC has no interest in contiguous lands other than those currently owned as shown on Plate 1-1 of the approved M&RP.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

RIGHT OF ENTRY

Regulatory Reference: 30 CFR 778.15; R645-301-114

Analysis:

Chapter 1, page 1-6, section **114, Right-of-Entry Information** of the June 19, 2007 submittal refers one to Chapter 1, page 1-6, section **114, Right-of-Entry** information in the approved MRP.

A review of Plate 1-2 in the approved Dugout Canyon Mine MRP indicates that all coal ownership in the Gilson seam of Section 20, T13S, R13E is by the State of Utah, School and Institutional Trust Lands Administration under mineral lease ML-48435-OBA. Plate 1-2 was last certified March 23, 2007 by Mr. David G. Spillman, P.E., and Manager of Technical Services for the Permittee.

Findings:

The minimum regulatory requirements of this section have been met.

LEGAL DESCRIPTION AND STATUS OF UNSUITABILITY CLAIMS

Regulatory Reference: 30 CFR 778.16; 30 CFR 779.12(a); 30 CFR 779.24(a)(b)(c); R645-300-121.120; R645-301-112.800; R645-300-141; R645-301-115.

Analysis:

TABLE 1-1. Degas Well Locations, Pine Canyon, Utah Quadrangle, Salt Lake Meridian as depicted on Page 1-3 of the submittal provides a legal descriptions for methane degasification well G-19. PLATE 1-4, included with the submittal depicts the proposed well location as it relates to the permit boundary for the Dugout Canyon Mine. Therefore, the need for the applicant to address that the permit area is within an area designated as unsuitable for mining is unnecessary. The well location exists within the area that has been permitted for coal extraction.

Findings:

The minimum regulatory requirements have been addressed.

PERMIT TERM

Regulatory References: 30 CFR 778.17; R645-301-116.

Analysis:

The current State of Utah mining permit issued by the Division of Oil, Gas and Mining was renewed on March 3, 2003. Same remains in affect until March 16, 2008. The proposal to drill degasification well G-19 has been received during the current permit term.

Findings:

The minimum regulatory requirements have been met.

PUBLIC NOTICE AND COMMENT

Regulatory References: 30 CFR 778.21; 30 CFR 773.13; R645-300-120; R645-301-117.200.

Analysis:

The proposal to permit and drill degasification well G-19 at the Dugout Mine will occur on private surface land managed by the heirs of the Milton and Ardith Thayn Trust. The permittee has previously provided a copy of the surface lease agreement (See **Appendix 4-2, SURFACE LANDOWNER AGREEMENT**, Task ID #1642) between the Thayn Trust and Canyon Fuel Company. The Permittee and the Thayn Trust coordinate annually to address the in-place degasification well drilling requirements as well as make any necessary updates which are felt necessary by either party. There is no need for a public notice and comment period.

Findings:

The requirements of this regulation are not relative to this application.

FILING FEE

Regulatory Reference: 30 CFR 777.17; R645-301-118.

Analysis:

The proposal to drill this single de-gasification well is not a permit application, but is an amendment to the currently approved mining and reclamation plan.

Findings:

This requirement is not relative to this permit amendment.

PERMIT APPLICATION FORMAT AND CONTENTS

Regulatory Reference: 30 CFR 777.11; R645-301-120.

Analysis:

This proposal is an amendment or modification to the currently approved mining and reclamation plan, which is an integral part of the permit. The determination that the permit application consisted of the proper format and adequately addressed the requirements of the disciplines relative to completeness was made prior to the receipt of this application.

Findings:

A determination that the permit application was administratively complete was made prior to receipt of this amendment. This requirement is not relative.

MAPS AND PLANS

Regulatory Reference: 30 CFR 777.14; R645-301-140.

Analysis:

All maps and plans that have been submitted with the application that are relative to well location, pad design, hydrology, or engineering design are certified by a Utah registered professional engineer.

Findings:

The minimum regulatory requirements have been addressed.

OPERATION PLAN

MINING OPERATIONS AND FACILITIES

Regulatory Reference: 30 CFR 784.2, 784.11; R645-301-231, -301-526, -301-528.

Analysis:

The purpose of the proposed methane de-gasification wells is to enhance the venting/dilution capability of the mine's ventilation system, such that dangerous levels of

methane gas are not allowed to accumulate within the gob area (area where the coal seam has been extracted and the roof has been allowed to cave) and/or the bleeder entries. The Permittee has determined that degasification well bores are necessary to reduce methane levels in the gob areas and bleeders to the point that coal can be efficiently mined and anticipated production levels can be met. Well G-19 is being permitted via this application.

As depicted on FIGURE 5-16, TYPICAL WELL DESIGN (DOGM approved / incorporated August 11,2006), the wells will be drilled to depths such that the hole bottom will stop twenty-five feet above the roof elevation of the Gilson coal seam. Depending on the amount of overburden at the specific well site, the well depths could vary from 1250 to 2050 feet.

The Task ID # 2812 application (June 19, 2007 submittal) does not contain any information relative to R645-301-600, **Geology.** Degasification wells are, as stated above, stopped twenty-five feet above the roof horizon of the seam being extracted. In general, no geologic data is collected at the well sites. Therefore, none of the coal seam or the strata above it will be extracted for analysis. Degasification wells are permitted by the DOGM as a mining related activity under the R645 coal rules.

None of the methane wells will be plugged immediately after drilling is completed, as their purpose is to bleed off the combustible gases within the mine, improving safety conditions and mining productivity. The anticipated life/usage of the degasification hole(s) is unknown at this time. The US DOI/BLM and the Division have determined that well life and initiation of plugging / reclamation activities are to be determined by the Permittee / Mine operator.

Findings:

This application is being reviewed as an addition to previous degasification well applications and it will be reviewed as an amendment to the mining and reclamation plan.

EXISTING STRUCTURES:

Regulatory Reference: 30 CFR 784.12; R645-301-526.

Analysis:

The proposal to construct the methane degasification wells will occur in an area well outside of the disturbance created by the Mine's facilities. There are no known dwellings, public buildings, schools, churches, or community buildings within 1,000 feet of the pre-determined well locations. There is no indication that blasting will be done during the construction/ reclamation process of the well sites. This regulation is not applicable.

Findings:

The minimum regulatory requirements of this section have been met.

RELOCATION OR USE OF PUBLIC ROADS

Regulatory Reference: 30 CFR 784.18; R645-301-521, -301-526.

Analysis:

All access roads within the surface lease agreement area are owned by the surface landowners, the heirs of the Milton and Ardith Thayn Trust. There are no public roads involved in the submittal.

Findings:

This regulation is not applicable to this submittal.

AIR POLLUTION CONTROL PLAN

Regulatory Reference: 30 CFR 784.26, 817.95; R645-301-244, -301-420.

Analysis:

The permittee's submittal commits to controlling fugitive dust in operational areas used by mobile equipment (See Chapter 4, page 4-7, section **424, Fugitive Dust Control Plan,** Task ID #2812 submitted June 19, 2007. The application of water will be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition unless it is below freezing.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

COAL RECOVERY

Regulatory Reference: 30 CFR 817.59; R645-301-522.

Analysis:

As stated previously, the methane wells will be drilled to depths varying from 1250 to 2050 feet, depending on the amount of overburden at the well location. All boreholes will be stopped at a depth that correlates to twenty-five feet above the roofline elevation of the Gilson coal seam. No coal will be recovered from the seams that are being mined within the Dugout Mine permit area. No test borings or drill cores are planned at the well sites.

Findings:

This regulation is not applicable to this amendment.

SUBSIDENCE CONTROL PLAN

Regulatory Reference: 30 CFR 784.20, 817.121, 817.122; R645-301-521, -301-525, -301-724.

Analysis:

Renewable Resources Survey

A discussion relative to **Structures and Renewable Resource Lands** is included as part of Chapter 5, page 5-27 of the Dugout Canyon Mine mining and reclamation plan. Same indicates that there are no major electrical transmission lines, pipelines, or agricultural drainage tile fields within the area to be extracted using long wall mining methods. All roads in section 20 are the private property of the heirs of the Milton and Ardith Thayn Trust. As previously mentioned, the permittee has been granted use of these roads via the surface lease agreement between Canyon Fuel Company and the heirs of the Milton and Ardith Thayn Trust.

Subsidence Control Plan

Chapter 5, page 5-7, section **525 Subsidence** (Task ID #2812) of the application indicates "no subsidence will occur at the well sites, as a result of drilling and development of the degasification well sites. Subsidence could occur at the well site because of underground mining..." The application references Section 525 of the approved mining and reclamation plan.

As the long wall panel is extracted from the Gilson seam, the roof will cave behind the shields as the face is mined and the shields are advanced. Although the broken material will swell to a certain extent as it breaks and falls, some settling of material will propagate to the surface, and the elevation of all surface over the extracted panel will be diminished.

A comparison of FIGURE 1-1, Methane Degas Borehole Locations, as submitted with the Task ID # 2812 application with the plate titled Location of Methane Drainage Wells (See Volume 2, Dugout Degasification Wells G-1 through G-17, Task ID # 2580) indicates that proposed degasification well G-19 will complement the methane extraction activities associated with longwall panel GIL-5. However, an additional bore(s) from G-19 must possibly be considered to affect gas extraction activities from the GIL-6 panel. The surface location of G-19 is adjacent to the tail gate entries / barrier pillar separating GIL-5 from GIL-6 (within the subsidence trough tension zone). It is possible that tension cracks to the surface could develop after extraction of the long wall panel out-by the G-19 location.

Subsidence Monitoring is discussed on pages 5-28 through 5-31 of the approved mining and reclamation plan. The commitment made by the permittee on page 5-30 is to install one monitoring point per panel.

Performance Standards For Subsidence Control

The permittee has an approved subsidence control plan in place, as evidenced via review of the approved mining and reclamation plan.

Notification

Chapter 5, page 5-34, section **525.300 Public Notice of Proposed Mining**, indicates that "each owner of property or resident within the area above an underground mining block and adjacent area that may be affected by subsidence will be notified by mail at least six months prior to mining or within that period if approved by the Division". That notification will include 1) the identification of specific areas in which mining will take place, 2) dates the specific areas will be undermined, and 3) the location or locations where the Dugout Canyon Mine subsidence control plan may be examined.

Findings:

The information provided meets the minimum regulatory requirements of this section.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 784.24, 817.150, 817.151; R645-301-521, -301-527, -301-534, -301-732.

Analysis:

Road Classification System

The privately owned access roads will remain in place after the venting phase of each of the wells is completed. Well site G-19 will be constructed on a previously developed road which was used during timbering of this area. The timber development road was built using dozers with side casting of soils technique. Over the years, some vegetation has re-established and it will have to be removed to access the proposed pad area. A roadway width of approximately twenty feet will need to be cleared for drill rig access. FIGUREs 1, 2, 3, and 4 are P.E. certified by Mr. Richard B. White, Utah registered professional engineer.

Plans and Drawings

The application contains the following proposed designs for the G-19 well pad; FIGURE 1, CONTOUR MAP FOR G-19, FIGURE 2, TYPICAL CROSS SECTIONS FOR G-19, and FIGURE 3, APPROXIMATE DRILLING LOCATION FOR G-19. All drawings depict the pre-existing road and the purpose intended for areas of that road, cut / fills necessary to construct this pad, and the reclamation contours to be established at final reclamation of this site.

As the road to pad G-19 is a pre-existing road, it will be retained after the well is plugged and the adjacent areas are returned to approximate original contour (See page 5-15, section **553.100, Disturbed Area Backfilling and Grading, Approximate Original Contour** of the 2812 application). Lateral and longitudinal road slopes will be re-established according to the re-establishment of approximate original contour requirements.

Primary Road Certification

The permittee's application does not classify the pre-existing road to G-19 which was constructed using side casting techniques. Much of the topsoil was cast to the top of the outslope to create a level lateral for machinery access. The road surface was constructed of compacted native top and subsoil material. The terminus of the G-19 road is depicted in Attachment 1, FIGURE 1. The roadway length that existed prior to developing the well pad location will be retained upon the completion of the methane venting process.

Findings:

The information provided meets the minimum regulatory requirements of this section.

SPOIL AND WASTE MATERIALS

Regulatory Reference: 30 CFR Sec. 701.5, 784.19, 784.25, 817.71, 817.72, 817.73, 817.74, 817.81, 817.83, 817.84, 817.87, 817.89; R645-100-200, -301-210, -301-211, -301-212, -301-412, -301-512, -301-513, -301-514, -301-521, -301-526, -301-528, -301-535, -301-536, -301-542, -301-553, -301-745, -301-746, -301-747.

Analysis:

Disposal Of Noncoal Mine Wastes

All noncoal waste generated by the well drilling activities will be disposed of in the same manner as waste generated at the main mine facilities area.

There will be no noncoal waste disposal at this proposed well site.

Coal Mine Waste

Chapter 5, page 5-3, section 513.300 Underground Development Waste, Coal Processing Waste, and Excess Spoil addresses this requirement. None of these types of material will exist at the well sites.

Refuse Piles

No refuse piles will exist at the well sites, (Chapter 5, page 5-3, Section **513.400, Refuse Piles**).

Impounding Structures

"No permanent impoundments will exist at the well sites, " (See **Chapter 7**, page 7-**11**, section **733.200 Permanent and Temporary Impoundments** of the submittal).

Burning And Burned Waste Utilization

This section is not applicable to this submittal.

Coal Processing Waste

No coal processing waste will be generated within the well sites, (Chapter 5, page 5-16, section **553.200 Spoil and Waste**).

Excess Spoil:

This section is not applicable to this submittal.

Findings:

The permittee has addressed those sections that are felt to be relevant to the proposed drilling of methane vent well G-19. The submitted information is adequate to meet the minimum regulatory requirements of this section.

SUPPORT FACILITIES AND UTILITY INSTALLATIONS

Regulatory Reference: 30 CFR Sec. 784.30, 817.180, 817.181; R645-301-526.

Analysis:

The proposed methane vent well is intended to enhance the mine ventilation system, allowing additional venting and dilution capability for the combustible mine gases that are inherent in the coal seam, as well as the adjacent strata. Thus, they are a support facility.

Chapter 5, page 5-8, section **526.200 Utility Installation and Support Facilities** of the submittal addresses this requirement. According to that information, no utilities will be installed at the well sites. A portable methane-exhausting unit will be installed, and the operation of that machine will be initiated with portable propane bottles. Upon start up, the device will be switched over to operate from the methane concentrations venting from the well, and will thus be self-sufficient.

Findings:

The information provided meets the minimum regulatory requirements of this section.

SIGNS AND MARKERS

Regulatory Reference: 30 CFR Sec. 817.11; R645-301-521.

Analysis:

Chapter 5, pages 5-6 and 5-7, section **521.100, Signs and Markers** addresses this requirement of the R645 Coal Mining Rules. The application commits the permittee to install a mine and permit identification sign at each well site that is developed. The identification sign will contain the following information: mine name, company name, company address, and

telephone number, MSHA identification number, and the permanent program identification number.

The application commits the permittee to install disturbed area perimeter markers to identify all acreage to be affected before beginning mining activities.

Stream buffer zone signs will be along the perennial channel which lies down gradient of the G-19 well pad (See Attachment 1, FIGURES 1 and 3 which depict the installation of at least two stream buffer zone signs on the down slope perimeter of well pad G-19 .

Topsoil storage signs will be placed on all topsoil stockpiles.

All signs and markers will be maintained until no longer needed, generally until all Phase III bond release requirements have been met.

Findings:

The information provided meets the minimum regulatory requirements of this section.

MAPS, PLANS, AND CROSS SECTIONS OF MINING OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-512, -301-521, -301-542, -301-632, -301-731, -302-323.

Analysis:

Mining Facilities Maps

The methane well submittal includes three maps/drawings for the proposed well G-19 site. These include:

1) A contour map, which depicts the undisturbed surface contour, and the relationship of the well pad.
2) A typical cross section for each well pad, depicting the pre-disturbed and final reclamation surface configuration, as well as the operational surface configuration.
3) A plan view of the "approximate" drilling layout for each of the proposed well sites showing the drill hole location and the mud pit. The plan view shows the various methods to control and treat intercepted precipitation, including sloping the pad(s), and the installation of berms and silt fences.

All figures for G-19 are P.E. certified by Mr. Richard B. White, Utah registered professional engineer.

Mine Workings Maps

ATTACHMENT 5-2 (Task ID # , for Degasification wellsG-18, G-31 and Access Road, received 7/11/2007 in the Price Field Office) contains the drawing Location of Methane Drainage Wells. This drawing was approved and incorporated by the Division on March 23, 2007, for wells G-13 through G-17, and was not re-submitted with the G-19 application. The drawing received on July 11, 2007 shows the location of G-19 and it can be determined that G-19 will implement one bore (as of 7/11/2007) which will intercept the Gilson coal seam in the GIL-6 panel. The Permittee has provided sufficient information to determine the surface location of the proposed G-19 well disturbed area, and as of 7/11/2007, it is known that G-19 will vent combusitlbe gases from the GIL-6 longwall panel..

Monitoring and Sampling Location Maps

All maps relative to this requirement are incorporated into the approved mining and reclamation plan for the Dugout Canyon Mine.

Certification Requirements

As noted above, all plans, drawings, and maps that are relative to this submittal have been certified by a Utah registered professional engineer.

Findings:

The submitted information is not adequate to meet the minimum regulatory requirements of this section.

RECLAMATION PLAN

GENERAL REQUIREMENTS

Regulatory Reference: PL 95-87 Sec. 515 and 516; 30 CFR Sec. 784.13, 784.14, 784.15, 784.16, 784.17, 784.18, 784.19, 784.20, 784.21, 784.22, 784.23, 784.24, 784.25, 784.26; R645-301-231, -301-233, -301-322, -301-323, -301-331, -301-333, -301-341, -301-342, -301-411, -301-412, -301-422, -301-512, -301-513, -301-521, -301-522, -301-525, -301-526, -301-527, -301-528, -301-529, -301-531, -301-533, -301-534, -301-536, -301-537, -301-542, -301-623, -301-624, -301-625, -301-626, -301-631, -301-632, -301-731, -301-723, -301-724, -301-725, -301-726, -301-728, -301-729, -301-731, -301-732, -301-733, -301-746, -301-764, -301-830.

Analysis:

Upon completion of the well, all machinery will be removed and the mud pits backfilled and compacted. Each disturbed well site will be reclaimed by returning it to approximate original contour, (See Chapter 5, page 5-10, section **537.200, Regrading of Settled and Revegetated Fills)**, roughening, and reseeding the area. An exhaust blower will be set up to create a low pressure area across the well head, allowing the combustible mine gases to vent to the atmosphere.

Upon completion of the venting phase (as determined by the Mine Permittee / PHH), well G-19 will be sealed in accordance with Federal Regulations 43 CFR Chapter 11, Subpart 3484, per a decision by the BLM and UDOGM. The remaining disturbed area will be returned to approximate original contour (See Chapter 5, page 5-13, **542.700 Final Abandonment of Mine Openings and Disposal Areas)**. Revegetation activities will commence; the only remaining equipment will be the disturbed area perimeter fence, and the permittee identification sign, which will remain until authorization is granted by the Division to remove the sign.

Findings:

The minimum regulatory requirements have been addressed.

APPROXIMATE ORIGINAL CONTOUR RESTORATION

Regulatory Reference: 30 CFR Sec. 784.15, 785.16, 817.102, 817.107, 817.133; R645-301-234, -301-412, -301-413, -301-512, -301-531, -301-533, -301-553, -301-536, -301-542, -301-731, -301-732, -301-733, -301-764.

Analysis:

Upon completion of the drilling phase of the well(s), the disturbance(s) will be reclaimed by regrading that portion not necessary for the venting phase to approximate original contour, (See Chapter 5, page 5-15, section **553.100 Disturbed Area Backfilling and Grading, Approximate Original Contour)** roughening the area to enhance moisture retention and re-seeding the area with the seed mix approved by the Division. See page 5-12, Chapter 5, section **537.200, Regrading of Settled and Revegetated Fills** (TASK ID# 2812). As indicated, "upon completion of the well site, the areas not required for the exhaust blower will be regraded to approximate original contour". If any settling should occur within the reshaped area, the permittee's submittal makes the commitment to regrade the settled areas.

After the venting phase of the degasification wells has been completed, the remainder of the disturbance will be reclaimed, returning the acreage associated with the venting phase to approximate original contour. This will be followed by roughening and reseeding of the area.

The disturbed area perimeter fence and the associated permittee identification signs will remain in place until the Division has made a determination that all reclamation standards have been adequately addressed.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

BACKFILLING AND GRADING

Regulatory Reference: 30 CFR Sec. 785.15, 817.102, 817.107; R645-301-234, -301-537, -301-552, -301-553, -302-230, -302-231, -302-232, -302-233.

Analysis:

General

See previous analysis under **APPROXIMATE ORIGINAL CONTOUR RESTORATION.**

Previously Mined Areas

The area has not been mined previously; the requirements of this section are not applicable to the methane well submittal.

Backfilling and Grading On Steep Slopes

Chapter 4, page 4-1, section **411.120 Land Capability** (Task ID #12812), indicates, "the well site areas are located on the flatter mesa tops and rolling terrain". A review of FIGURES 1, and 2, which are the contour maps / cross sections for well siteG-19, reveals that the lateral cross section identified as B-B' exists at a vertical angle of just under 29 degrees. The R645 Coal Mining Rules define steep slopes as any slope which is twenty degrees or more as measured from horizontal. Thus, the fill slope which will be constructed as part of this reclamation will require special consideration(s) to achieve a stable back filled area.

The fill in section B-B' will be given a concave shape across it's length of face, (A-A' longitudinal axis, a 250 foot length) to help the replaced fill reach stability. Roughening of the fill will be implemented to provide sediment control, and implement water harvesting techniques
.

Special Provisions for Steep Slope Mining

This requirement is not applicable to this submittal, as mining is not being conducted..

Findings:

The information submitted meets the minimum regulatory requirements of this section.

MINE OPENINGS

Regulatory Reference: 30 CFR Sec. 817.13, 817.14, 817.15; R645-301-513, -301-529, -301-551, -301-631, -301-748, -301-765, -301-748.

Analysis:

Reclamation of the methane vent wells is addressed in Chapter 5; section **540 RECLAMATION PLAN**, section **542.700, Final Abandonment of Mine Openings and Disposal Areas**, and section **560, PERFORMANCE STANDARDS**. The commitments made within these sections address both the requirements of R645-301-529 and 43 CFR Chapter 11, Subpart 3484 (3).

Section **541.100, Commitment** indicates, "Upon the permanent cessation of methane venting, Dugout Canyon Mine will seal the wells and permanently reclaim all affected areas in accordance with the R645 regulations and this reclamation plan."

The sealing of wells involves meeting the minimum regulatory requirements associated with R645-301-765. Page 7-13, **Chapter 7, HYDROLOGY**, section **748, Casing and Sealing Wells,** refers one to **Chapter 5, ENGINEERING**, section **542.700**, **Final Abandonment of Mine Openings and Disposal Areas.** Page 5-13 states, "...G-19 will be sealed in accordance with Federal regulations 43 CFR Ch. 11, Subpart 3484, (3) The casings on de-gas well sites G-2 through G-7 will be plugged at the bottom to hold concrete. A lean concrete mixture will be poured into the casing until the concrete is within five (5) feet of the surface. At that time, the casing will be cut off at ground level and the rest of the casing will be filled with lean concrete. The concrete will be allowed to harden before the final reclamation is completed."

Methane degasification wells are unique in that they are drilled to a depth that is approximately twenty-five feet above the coal seam that is being extracted. As the longwall face retreats and extracts the coal from the area beneath the borehole, the roof caves as the longwall shields are advanced in order to protect the machinery. Hopefully, the roof caves up to the bottom of the degasification well, completing the circuit, and allowing atmosphere containing

mine gases to be vented to the surface. An exhaust blower will sit on the surface creating a low pressure across the wellhead, venting the mine gases from the underground gob area.

It is generally accepted that more than 90% of the subsidence associated with coal extraction via longwall mining methods will occur within the first year after completion of the extraction process. The casing of the methane vent well may be subjected to crushing or shearing anywhere along its length, due to the shifting, bending and/or breaking of the strata adjacent to the well. Thus, the venting of combustible gases from the gob areas of the mine may be short lived. The plugging of these casings may only be effective in preventing adverse environmental or health and safety effects to a certain extent. The prevention of cross contamination of aquifers may not be possible in consideration of the fact that the plugging of the hole may not be possible for its entire depth.

Findings:

The permittee has committed to plugging the degasification well casings to the extent possible to prevent adverse environmental damage or possible effects to health and safety. This commitment is the best that can be given at this point in time, as only the future will tell if the partial plugging of the wells will be adequate. The minimum regulatory requirements of this section have been addressed.

ROAD SYSTEMS AND OTHER TRANSPORTATION FACILITIES

Regulatory Reference: 30 CFR Sec. 701.5, 784.24, 817.150, 817.151; R645-100-200, -301-513, -301-521, -301-527, -301-534, -301-537, -301-732.

Analysis:

Reclamation

Chapter 5, page 5-14, section **542.600 Roads** of the methane well submittal addresses this requirement. Well site G-19 will be constructed on a pre-existing road which was constructed in order to log the area. Therefore, the road (which forks at its terminus) will be re-established by reclamation activities.

Retention

As mentioned elsewhere in this technical memorandum, the roads in place at the present time are the property of the heirs of the Milton and Ardith Thayn Trust. They will stay in place after the venting phase of the wells has been completed. The surface use agreement in place

between Canyon Fuel Company and the Trust allows the permittee the use of the roads for the length of the agreement.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

CONTEMPORANEOUS RECLAMATION

Regulatory Reference: 30 CFR Sec. 785.18, 817.100; R645-301-352, -301-553, -302-280, -302-281, -302-282, -302-283, -302-284.

Analysis:

General

Upon completion of the drilling phase of the well(s), approximately 60-70% of the disturbance(s) will be reclaimed by regrading that portion to approximate original contour, (See Chapter 5, page 5-15, section **-553.100 Disturbed Area Backfilling and Grading, Approximate Original Contour**) roughening the area to enhance moisture retention and re-seeding the area with the seed mix approved by the Division. See page 5-12, Chapter 5, section **-537.200, Regrading of Settled and Revegetated Fills.** As indicated, "upon completion of the well site, **the areas not required for the exhaust blower** will be regraded to approximate original contour". If any settling should occur within the reshaped area, the permittee's submittal makes the commitment to regrade the settled areas.

Findings:

The submitted information meets the minimum regulatory requirements.

MAPS, PLANS, AND CROSS SECTIONS OF RECLAMATION OPERATIONS

Regulatory Reference: 30 CFR Sec. 784.23; R645-301-323, -301-512, -301-521, -301-542, -301-632, -301-731.

Analysis:

Affected Area Boundary Maps

The general location of the proposed wells is depicted on PLATE 1-4, which shows the permit boundary for the Dugout Canyon Mine. The proposed disturbance for well G-19 is depicted on FIGUREs 1 and 3. All figures are P.E. certified by a Utah registered professional engineer.

Bonded Area Map

The bonded area for well G-19is depicted by FIGURE 1.

Final Surface Configuration Maps

The permittee has committed to returning the drill pad areas to approximate original contour. Thus, the final surface configuration should very closely resemble the contours depicted on FIGUREs 1 and 2.

Certification Requirements

All maps and drawings requiring certification as listed under R645-301-512 are P.E. certified by Mr. Richard B. White, Utah registered professional engineer.

Findings:

The submitted information meets the minimum regulatory requirements of this section.

RECOMMENDATION:

The submittal meets the minimum regulatory requirements of the R645 Coal Mining Rules and it should be approved.

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